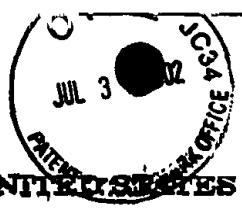
03500.014833



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Katsuhiko TAKAHASHI, et al.

Application No.: 09/672,769

Filed: September 29, 2000

For: AQUEOUS INK COMPOSITION FOR INK JET, INK CARTRIDGE, RECORDING UNIT, INK JET RECORDING APPARATUS, AND INK JET RECORDING METHOD

Examiner : C. Sheehan

Group Art Unit: 1714

OK to enter
C.S.
8/12/02

Director, the Commissioner for Patents
Washington, D.C. 20231

DECLATION UNDER 37 C.F.R. §1.132
OF YUTAKA KURABAYASHI

Sir:

I, YUTAKA KURABAYASHI, residing at 23-62, Kumegawa-cho 4-chome, Higashi Murayama-shi, Tokyo, Japan, hereby declare and state as follows:

Yutaka Kurabayashi

1. I am one of the co-inventors of the above-captioned patent

application ("the present application") and am familiar with its prosecution, including the Office Action mailed on May 1, 2002.

2. I graduated from Tohoku University in March 1986, receiving a Ph. D. Degree in the field of Photo Chemistry.

Yutaka Kurabayashi

3. I have been employed by Canon Kabushiki Kaisha since April, 1 1986, and have been engaged in the development of ink-jet ink since October 1, 1991.

4. I conducted an experiment using two different ink-jet inks (Inks A and B), with the purpose of demonstrating that ink prepared using Urea (Ink B), in accordance with the disclosure of U.S. Patent No. 6,031,019 (Tsutsumi et al.), does not exhibit the superior level of stability during long-term storage that is achieved by the inks of the present invention (Ink A) prepared using Ethylene Urea. The results of the experiment were as follows.

Experiment

For the purpose of this experiment, carbon black-containing cationic resin particles and cationic self-dispersing carbon black particles were prepared in accordance with Example 2, found at page 51, line 3, through page 52, line 10 of the specification as originally filed.

Inks A and B were prepared having the following components.

Ink A

Carbon black-containing cationic resin particles (using 10 ml of an aqueous dispersion, as prepared in Example 2)	2.0 parts
Cationic self-dispersing carbon black particles as prepared in Example 2	4.0 parts
Glycerol	5.0 parts
Ethylene Urea	10.0 parts
Ion exchanged water	79.0 parts

Ink B

Carbon black-containing cationic resin particles (using 10 ml of an aqueous dispersion, as prepared in Example 2)	2.0 parts
Cationic self-dispersing carbon black particles as prepared in Example 2	4.0 parts
Glycerol	5.0 parts
Urea	10.0 parts
Ion exchanged water	79.0 parts

Fifty milliliter samples of each ink were placed in separate 100 ml fluorine resin vessels, and kept in an incubator at 60 °C for one month, at which time the condition of the ink was visually observed. I observed that Ink B had separated into a black sediment layer and a clear supernatant.

showing disruption of dispersion state of the colorant-encapsulating resin particles and cationic self-dispersing carbon black particles. No such phase separation was observed with Ink A. Ink jet recording could not be carried out with Ink B due to the disruption of the dispersion state. On the other hand, after storage, when Ink A was charged in an ink cartridge for black ink, and ink jet recording was performed using an ink-jet printer S600 (Canon), steady printing was achieved with Ink A.

The above experimental results show the unexpected superiority of Ink A (containing Ethylene Urea) to Ink B (containing Urea), in terms of storage stability.

5. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed by me to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of any patent that might issue on the above-identified application.

Yutaka Kurabayashi

YUTAKA KURABAYASHI

July 30, 2002

Date